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(54)【発明の名称】 飲食品用フレーバー劣化防止剤及びその利用

(57)【要約】

【目的】 飲食品にクロロゲン酸、カフェー酸、フェルラ酸よりなる群から選ばれた少なくとも1種とプロアントシアニジンとを併せて含有せしめることによって該飲食品のフレーバー劣化を効果的に防止する。

【構成】 飲食品製造の任意の工程において、クロロゲン酸、カフェー酸、フェルラ酸よりなる群から選ばれた少なくとも1種及びプロアントシアニジン少量体の約1:9乃至約9:1の混合物を飲食品の重量に基づいて約0.01~約0.05重量%程度の範囲で添加する。

## 【特許請求の範囲】

【請求項1】 (a)クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化性成分と、(b)プロアントシアニジン少量体よりなる抗酸化性成分からなることを特徴とする飲食品のフレーバー劣化防止剤。

【請求項2】 (a)クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化性成分と、(b)プロアントシアニジン少量体よりなる抗酸化性成分を含有することを特徴とする改善されたフレーバー劣化防止性を有する飲食品。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は飲食品のフレーバー劣化防止剤及びそれを添加した改善されたフレーバー劣化防止性を有する飲食品に関し、更に詳しくは、(a)クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化性成分と、(b)プロアントシアニジン少量体よりなる抗酸化性成分を含有する顕著な相乗的抗酸化性を示す抗酸化剤、及びそれを含有するフレーバー劣化防止性に優れた飲食品に関する。

## 【0002】

【従来の技術】飲食品の製造工程中又は保存中におけるフレーバーの劣化はある程度避け難いものである。従来からこれら飲食品のフレーバー劣化を可能な限り軽減しようとする工夫がなされ、例えば、近年になって生の食品材料を真空包装し、その袋ごと低温で加熱調理する真空調理食品が、香気香味の逸散がなく食品素材の持味をそのまま賞味できるという点で注目されているが、材料の適性範囲に限界があり、また、細菌の残存の問題など未解決の課題が多くあり、未だ充分に満足できる方法とはなり得ていない。

【0003】一方、飲食品の褪色或は褐変等の変色防止に関しては幾つかの提案がなされており、例えば、クロロゲン酸、カフェー酸等の抗酸化性を利用したアントシアニン系色素の褪色防止剤(特公平1-22872号公報)及びアントシアニン系色素含有飲食物(特開平1-132344号公報)、バプrika色素の褪色防止方法(特公昭59-50265号公報)等が開示されている。また、カフェー酸、フェルラ酸、クロロゲン酸等による糖類の褐変防止方法(特開昭57-115147号公報)、糖類の褐変防止効果を利用した褐変のないキャンディーの製造法(特公昭58-32855号公報)等も提案されている。

【0004】また、近年ぶどう果実の搾汁粕または種子等の植物体から採取されるプロアントシアニジン少量体を有効成分とする酸化防止剤が食品、医薬品及び化粧品などの酸化による劣化を防止するに有用であることが開示されている(特公平3-7232号公報、特開平3-200781号公報)。

## 【0005】

【発明が解決しようとする課題】飲食品の加工工程あるいは保存中におけるフレーバーの変質劣化は重大な課題であるにもかかわらず、未だ満足のできる解決法は見いだされていない。かかる飲食品のフレーバーの変質劣化は、前記の如き従来提案されているアントシアニン、バプrika等の色素類又は糖類の存在の有無にかかわらず生起する厄介な課題である。飲食品のフレーバーは、一般的に極めて不安定な化合物の集合からなっており、飲食品の加工又は保存中の熱、光、空気、酵素等の作用を受け易く、それによって変質し、品質の低下を招くことはよく知られている。飲食品が変質を起こす反応には、酸化、還元、脱水素、加水分解、重合、閉環、開環、エステル化、脱炭酸、二重結合の移動など数多くの反応が関与している。

【0006】前記の従来提案されているときクロロゲン酸、カフェー酸、フェルラ酸等は、それら単独では加熱によるフレーバーの変質を抑制する効果は比較的大きいが、光照射によるフレーバーの劣化防止には必ずしも充分ではない。また同様の目的で使用されるプロアントシアニジン少量体は、光によるフレーバーの劣化を抑制する効果はあるが、加熱によるフレーバー変質防止には必ずしも十分とはいいがたく更なる改善方法が求められている。

## 【0007】

【課題を解決するための手段】本発明者らは、上記のごとき従来提案の欠点を解決すべく鋭意研究を重ねてきたその結果、今回、クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化成分と、プロアントシアニジン少量体よりなる抗酸化成分を併用して飲食品に添加すると、夫々単独では達成し得ない飛躍的な相乗効果により、該飲食品の加工乃至保存中における加熱及び光によるフレーバーの減少乃至変化、異味異臭の発生等の不都合なフレーバー劣化を顕著に抑制することができることを見だし本発明を完成した。

【0008】従って本発明は、(a)クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化性成分と、(b)プロアントシアニジン少量体よりなる抗酸化性成分を結合した飲食品のフレーバー劣化防止剤、及び該フレーバー劣化防止剤を含有する改善されたフレーバー劣化防止性を有する飲食品を提供するものである。

【0009】本発明において使用するクロロゲン酸、カフェー酸およびフェルラ酸はそれ自体既知のものであり、市販品として入手可能であり、さらに例えばコーヒー生豆などの天然物から抽出採取することもできる。これらクロロゲン酸、カフェー酸およびフェルラ酸は必ずしも純品である必要はなく、例えば下記の如くして得られるコーヒー生豆の抽出物をそのまま利用することができる。

【0010】粉碎したコーヒー生豆に、約0.05〜約20倍重量のエタノールもしくは含水エタノールを添加して、例えば、約60℃〜約100℃で、例えば約1時間乃至約10時間加熱する。冷却後、不溶性固形分を分離、除去して得られる抽出液に塩酸濃度が例えば約3〜10%になるように塩酸を添加して、例えば約50℃〜約100℃で、約30分〜約5時間加熱攪拌する。次いで濃縮後、該濃縮液を例えば、水酸化ナトリウム、水酸化カリウムなどを用いて中和し、さらに例えば多孔性重合樹脂で処理して該樹脂に吸着させ、次いで該樹脂を例えばエタノールで溶出処理して、クロロゲン酸、カフェー酸等を含有する抽出物を得ることができる。或いは上記抽出液を加水分解処理することなくそのまま溶媒を回収して濃縮し、次いで塩化メチレンなどで洗浄した後、上記と同様に多孔性重合樹脂で吸着処理することにより本発明で利用しうるコーヒー抽出物を得ることができる。本発明においてクロロゲン酸、カフェー酸およびフェルラ酸又はこれらを含有するコーヒー抽出物は、そのまま使用してもよいし、またはこれら有効成分の適当な希釈剤もしくは担体との組成物の形態で使用してもよい。このような希釈剤もしくは担体の例としては、アラビアガム、デキストリン、グルコース、サイクロデキストリン、シュクロース等の如き固体希釈剤もしくは担体；水、エタノール、プロピレングリコール、グリセリン、界面活性剤等の如き液体希釈剤もしくは担体を挙げることができる。クロロゲン酸、カフェー酸およびフェルラ酸又はこれらを含有するコーヒー抽出物は、かかる希釈剤もしくは担体を用いて液状、乳液状、ペースト状、粉末状、顆粒状その他適宜の剤形とすることができる。また、本発明において使用するプロアントシアニジン少量体としては、例えば前記特公平3-7232号公報又は特開平3-200781号公報に開示されている方法によってブドウ果実の搾汁粕又は種子等から熱水抽出して得られるプロアントシアニジン少量体及びその没食子酸エステル等を挙げることができる。これらのプロアントシアニジン少量体は、また市販品として容易に入手することもできる。

【0011】本発明の飲食品フレーバー劣化防止剤における(a)クロロゲン酸、カフェー酸、フェルラ酸から選ばれる少なくとも1種よりなる抗酸化性成分と、

(b)プロアントシアニジン少量体の混合割合は、特に制限されるものではなく、広い範囲にわたって変えることができるが、通常は例えば(a)成分と(b)成分を約1:9乃至約9:1の範囲内、好ましくは約1:1の間重量比で混合使用するのが好都合である。

【0012】本発明の飲食品のフレーバー劣化防止剤は、飲食品本来のフレーバーが変質、劣化するのを防止することは勿論のこと、新たに添加したエッセンス、油性香料、乳化香料、粉末香料等の着香料、風味調味料等のフレーバー等が変質、劣化するのを防止する効果があ

る。

【0013】本発明における飲食品の具体例としては、例えば、瓶類、缶類、紙カートン容器、PETボトル、レトルト用ラミネート袋、プラスチックカップ等に充填される無果汁飲料、果汁入り飲料、乳酸菌飲料、茶類飲料、コーヒー飲料、豆乳飲料、スープ類等の飲料類；アイスクリーム、シャーベット、みぞれ等の冷菓類；プリン、パバロア、ゼリー、ヨーグルト等の如きデザート食品類を挙げることができる。

【0014】本発明の飲食品のフレーバー劣化防止剤のこれら飲食品に対する添加量は、特に制限されるものではなく、飲食品の種類等に応じて幅広く選択することができるが、一般的には飲食品の約0.01〜約0.05重量%程度の範囲内で添加するのが適当である。

【0015】以下、参考例、実施例及び比較例によって本発明を更に具体的に説明する。

【0016】

【参考例1】コーヒー生豆300gをコーヒーミルにて粉碎し、この粉碎物に1500gの70%エタノール水溶液を加えて、90℃、2時間攪拌加熱した。冷却後不溶性固形分を除去して、抽出液1100gを得た。次いでこれに35%塩酸180gを加えて、抽出液中の塩酸濃度が約5%になるように調整し、70℃、1時間攪拌加熱した。冷却後減圧下で300gになるまで濃縮し、得られた濃縮液に20%水酸化ナトリウムを添加してpH11以上に調整し、次いで塩化メチレン600gを加えて充分混合攪拌した。水層を分離し、これに10%塩酸を加えてpHを6〜7に調整し、このpH調整液をダイイオンHP-20樹脂500mlを充填したカラム中に徐々に流した。次いで樹脂を充分に水洗した後95%エタノール300gを流して樹脂に吸着した物質を溶出させた。得られた溶液を減圧濃縮後、乾燥してクロロゲン酸及びカフェー酸の混合物12gを得た(参考品1)。

【0017】

【実施例1】グラニュー糖12重量部、クエン酸0.15重量部及びクエン酸ナトリウム0.02重量部を水88重量部に溶解してBrix12°、pH3.0のレモンシロップを調製した。このシロップにクロロゲン酸、カフェー酸類及びプロアントシアニジン少量体(酸化防止剤KPA；キッコーマン製、以下、KPAと称する)の所定量を単独又は組み合わせて添加溶解し、得られた夫々のシロップにレモンエッセンスを1/1000重量部ずつ添加した後、透明ガラスビンに充填して密栓し85℃で15分間殺菌し冷却して供試用レモン飲料を調製した。夫々の飲料を直射日光に3日間さらした後、冷蔵庫に保存しておいた対応する試料と香味を比較した。フレーバーの劣化の度合は、よく訓練されたパネラー10名によって官能評価した。その結果を表1に示す。

【0018】

【表1】

表 1

劣化防止剤の種類	添加量 ppm	評価*
クロロゲン酸	0.02%	○
カフェー酸	0.02%	○
フェルラ酸	0.02%	○
KPA (プロアントシアニジン少量体)	0.02%	○
参考品1 (コーヒー豆抽出物)	0.02%	○
本発明品1 (クロロゲン酸+KPA)	0.01%+0.01%	◎
本発明品2 (参考品1+KPA)	0.01%+0.01%	◎
本発明品3 (カフェー酸+KPA)	0.01%+0.01%	◎
本発明品4 (カフェー酸+クロロゲン酸+KPA)	0.01%;0.01%	◎
対照品1 (無添加品)	0%	×

\*評価記号の説明

◎:殆ど変化なし

○:明らかに変質している

△:かなり変質劣化している

×:著しく変質劣化している

表1の結果から明らかなとおり、クロロゲン酸、カフェー酸、フェルラ酸及びプロアントシアニジン少量体は、夫々単独でもある程度のフレーバー劣化防止効果を有しているが、まだ充分ではない。これに対して、参考品1、クロロゲン酸、カフェー酸等とプロアントシアニジン少量体を併用した試料は、夫々の添加量が少ないにもかかわらずフレーバーの変質劣化は殆ど認められなかった。

【0019】

【実施例2】フドウ糖果糖液糖14.6重量部、温州蜜柑1/5濃縮果汁1.7重量部、クエン酸0.2重量部、\*

\*クエン酸ナトリウム0.02重量部、ビタミンC 0.01重量部を水84重量部に溶解してBrix12°、pH

3.0のオレンジシロップを調製した。このシロップにクロロゲン酸、カフェー酸及びKPA (プロアントシアニジン少量体) の所定量を単独又は組合わせて添加溶解し、得られた夫々のシロップにオレンジエッセンス1/1000重量部、カロチン着色料1/1000重量部づつを添加した後、透明ガラスビンに95℃でホットパックし、冷却して供試用オレンジ飲料を調製した。夫々の飲料を50℃の恒温槽及びコントロールとして5℃の冷蔵庫に別々に10日間保存後、よく訓練された10名のパネラーにより冷蔵品に対するフレーバーの劣化度合を官能評価した。その結果を表2に示す。

40 【0020】

【表2】

表 2

劣化防止剤の種類	添加量	評価
1. 茶カテキン	0.02%	○
2. 水溶性ルチン	0.02%	△
3. KPA	0.02%	△
4. ひまわり種子抽出物	0.02%	○
5. 生コーヒー豆抽出物	0.02%	△
6. 茶カテキン+生コーヒー豆抽出物	0.01%+0.01%	△
7. 水溶性ルチン+生コーヒー豆抽出物	0.01%+0.01%	△
8. ひまわり種子抽出物+生コーヒー豆抽出物	0.01%+0.01%	△
9. 本発明品5 (KPA+生コーヒー豆抽出物)	0.01%+0.01%	◎
10. 本発明品6 (KPA+カフェー酸)	0.01%+0.01%	◎
11. 対照品1 (無添加品)	0%	×

評価記号の意味は前記したと同じである。

【0021】

【実施例3】

(1) 焙煎コーヒー豆(焙煎度:L値21)の粉碎物1 30  
00gに約10重量倍の熱水(95℃±1℃)を加えて  
Bx. 2.6~2.8° のコーヒーエキス1000gを得\*

\*た。このコーヒーエキスを使用し、下記表3に示す配合  
割合でコーヒー飲料を調製した。

【0022】

【表3】

表 3

組 成	配合割合
コーヒーエキス Bx.2.7	50.0 重量%
グラニュー糖	6.1 "
全脂粉乳	0.5 "
脱脂粉乳	0.5 "
シュガーエステル HLB15	0.05 "
pH調整剤 (重曹)	0.09 "
コーヒーフレーバー	0.1 "
水	42.66 "
合 計	100.00 "

(2) 下記表4に示す配合割合によりアンチオキシダン  
トを調製した。 \* 【0027】  
【0024】  
【0023】 \* 【表4】

表 4

	A (本発明品)	B	C
KPA	100重量%	200重量%	0 重量%
コーヒークロロゲン酸(純度30%)	100 "	0 "	200 "
グリセリン	200 "	200 "	200 "
95%アルコール	200 "	200 "	200 "
水	400 "	400 "	400 "
合 計	1000 "	1000 "	1000 "

前記(1)で調製したコーヒー飲料に(2)で調製した  
アンチオキシダントAを0.02%、0.05%及び0.  
1%添加した試料を調製した。比較品としてアンチオキ  
シダントBを0.05%及び0.1%、アンチオキシダン  
トCを0.05%及び0.1%添加した試料も調製した。※

※これらの試料を5℃で1週間保存し、冷蔵庫保存品を  
コントロールとしてよく訓練された10名のパネラーに  
より官能評価を行った。その結果を表5に示す。  
【0025】  
【表5】

表 5

アンチオキシダントA (本発明品)	
0.02%	トップのフレッシュ感はやや足りないが許容範囲
0.05%	調製時の好ましい風味をほぼそのまま保持しており良好
0.1%	同上
アンチオキシダントB	
0.05%	トップのフレッシュ感なく香味がボケておりやや不良
0.1%	トップのフレッシュ感は足りないが許容範囲
アンチオキシダントC	
0.05%	トップのフレッシュ感なく香味がボケておりやや不良
0.1%	トップのフレッシュ感は足りないが許容範囲

【0026】

【0030】表5の結果から明らかなとおり、本発明のプロアントシアニジンとコーヒークロロゲン酸を組み合わせたアンチオキシダントAは、それぞれを単独で使用したアンチオキシダントB及びアンチオキシダントCに対して約1/2乃至約1/5量以下で同等又はそれ以上のフレーバー劣化防止効果があった。

\*【0027】

【実施例4】紅茶(BOP)に50倍重量の温水を加え、60℃で10分間抽出して糖度約0.7°の紅茶エキスを調製した。この紅茶エキスをを用いて下記表6に示す配合割合によりミルクティー飲料を調製した。

【0028】

【表6】

\*  
表 6

原 材 料	配 合 量
グラニュー糖	14.2kg
脱脂粉乳	2.4 "
全脂粉乳	1.6 "
紅茶エキス(Bx. 0.7°)	70.0 "
乳化剤(ショ糖脂肪酸エステル HLB15)	0.1 "
ブラックティーフレーバー(長谷川香料製)	0.1 "
水を加えて合計	200リットル

上記のミルクティー飲料に実施例3でできる用いたと同じアンチオキシダントAを0.05重量%添加して瓶詰後、120℃で20分間殺菌後冷却し、実施例3と同様に50℃で5日間保存後官能評価した結果、製造時の好ましい風味をそのまま維持していた。

【0029】

【発明の効果】本発明によれば、クロロゲン酸、カフェー酸、フェルラ酸よりなる群から選ばれた少なくとも1※50

※種の抗酸化性成分とプロアントシアニジン少量体よりなる抗酸化性成分とを組合せによる顕著な相乗効果をもつ飲食品のフレーバー劣化防止剤が提供される。また、このフレーバー劣化防止剤を飲食物に含有せしめることによって、該飲食品の加工乃至保存中における香気香味の減少乃至変化、異味異臭の発生等の不都合なフレーバー劣化を効果的に抑制することができる。

フロントページの続き

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谷川香料株式会社内



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L23: Entry 2 of 2

File: DWPI

Feb 15, 1994

DERWENT-ACC-NO: 1994-088625  
DERWENT-WEEK: 200002  
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TITLE: Flavour deterioration preventing agent for food and drink - contains chlorogenic, caffeic and/or ferulic acids, and pro:antocyanidine oligomer

PATENT-ASSIGNEE: HASEGAWA CO LTD (HASE)

PRIORITY-DATA: 1992JP-0214724 (July 21, 1992)

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## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> <u>JP 06038723 A</u>	February 15, 1994		008	A23L003/3544
<input type="checkbox"/> <u>JP 2983386 B2</u>	November 29, 1999		008	A23L003/3544

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 06038723A	July 21, 1992	1992JP-0214724	
JP 2983386B2	July 21, 1992	1992JP-0214724	
JP 2983386B2		JP <u>6038723</u>	Previous Publ.

INT-CL (IPC): A23L 1/00; A23L 1/221; A23L 3/3544; C09K 15/06

ABSTRACTED-PUB-NO: JP 06038723A  
BASIC-ABSTRACT:

The agent for flavour is composed of (a) at least one antioxidative components selected from chlorogenic acid, caffeic acid and ferulic acid and (b) antioxidant component composed of proantocyanidine oligomer. Pref. (a) and (b) are used at a weight proportion of 1:9-9:1. The agent is used in amt. 0.01-0.05 w/w%. Chlorogenic acid, caffeic acid and ferulic acid are contained in raw coffee beans and its ethanol extract can be also used as component (a). Proantocyanidine oligomer can be obtd. by extracting the pressed residue of grapes and their seeds with hot water.

USE/ADVANTAGE - A remarkable synergic antioxidative effect can be attained. By combining it in foods and drinks, the decrease and change of the taste and flavour and the formation of undesirable taste and flavour during the storage of food and drinks is suppressed effectively.

ABSTRACTED-PUB-NO: JP 06038723A  
EQUIVALENT-ABSTRACTS:

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L24: Entry 1 of 2

File: JPAB

Feb 15, 1994

PUB-NO: JP406038723A

DOCUMENT-IDENTIFIER: JP 06038723 A

TITLE: PREVENTING AGENT FOR DETERIORATION OF FLAVOR OF FOOD AND DRINK AND ITS UTILIZATION

PUBN-DATE: February 15, 1994

## INVENTOR-INFORMATION:

NAME

COUNTRY

TOJO, HIROAKI

TOYODA, NAOMI

TOMONO, FUMIO

SUZUKI, KAZUTADA

## ASSIGNEE-INFORMATION:

NAME

COUNTRY

T HASEGAWA CO LTD

APPL-NO: JP04214724

APPL-DATE: July 21, 1992

US-CL-CURRENT: 426/321

INT-CL (IPC): A23L 3/3544; A23L 1/00; A23L 1/221; C09K 15/06

## ABSTRACT:

PURPOSE: To effectively prevent the flavor of a food and drink from deteriorating by including at least one selected from the group consisting of chlorogenic acid, caffeic acid and ferulic acid and proanthocyanidin in combination therein.

CONSTITUTION: The preventing agent for deterioration of the flavor containing a mixture of at least one selected from the group consisting of chlorogenic acid, caffeic acid and ferulic acid with an oligomer of proanthocyanidin at about (1:9) to about (9:1) in an amount within the range of about 0.01 to about 0.05wt.% based on the weight of the food and drink in an optional step for producing the food and drink.

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## PATENT ABSTRACTS OF JAPAN

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(51)Int.Cl.

A23L 3/3544

A23L 1/00

A23L 1/221

C09K 15/06

(21)Application number : 04-214724

(71)Applicant : T HASEGAWA CO LTD

(22)Date of filing : 21.07.1992

(72)Inventor : TOJO HIROAKI

TOYODA NAOMI

TOMONO FUMIO

SUZUKI KAZUTADA

### (54) PREVENTING AGENT FOR DETERIORATION OF FLAVOR OF FOOD AND DRINK AND ITS UTILIZATION

(57)Abstract:

PURPOSE: To effectively prevent the flavor of a food and drink from deteriorating by including at least one selected from the group consisting of chlorogenic acid, caffeic acid and ferulic acid and proanthocyanidin in combination therein.

CONSTITUTION: The preventing agent for deterioration of the flavor containing a mixture of at least one selected from the group consisting of chlorogenic acid, caffeic acid and ferulic acid with an oligomer of proanthocyanidin at about (1:9) to about (9:1) in an amount within the range of about 0.01 to about 0.05wt.% based on the weight of the food and drink in an optional step for producing the food and drink.

### LEGAL STATUS

[Date of request for examination]

18.08.1997

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2983386

[Date of registration] 24.09.1999

[Number of appeal against examiner's  
decision of rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

JAPANESE

[JP,06-038723,A]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE  
INVENTION TECHNICAL PROBLEM MEANS CORRECTION OR AMENDMENT

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[Translation done.]

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CLAIMS

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[Claim(s)]

[Claim 1] (a) The flavor degradation inhibitor of the eating-and-drinking article characterized by consisting of an antioxidation nature component which consists of at least one sort chosen from chlorogenic acid, caffeic acid, and ferulic acid, and an antioxidation nature component which consists of a (b) pro anthocyanidin little object.

[Claim 2] (a) The eating-and-drinking article which has the improved flavor degradation tightness which is characterized by containing the antioxidation nature component which consists of at least one sort chosen from chlorogenic acid, caffeic acid, and ferulic acid, and the antioxidation nature component which consists of a (b) pro anthocyanidin little object.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

**[0001]**

**[Industrial Application]** This invention relates to the anti-oxidant in which the remarkable multiplication-antioxidation nature containing the antioxidation nature component which consists of at least one sort chosen from (a) chlorogenic acid, caffeic acid, and ferulic acid in more detail, and the antioxidation nature component which consists of a (b) pro anthocyanidin little object is shown, and the eating-and-drinking article excellent in the flavor degradation tightness containing it about the eating-and-drinking article which has the improved flavor degradation tightness which added the flavor degradation inhibitor of an eating-and-drinking article, and it.

**[0002]**

**[Description of the Prior Art]** It is to some extent hard to avoid degradation of the flavor under the production process of an eating-and-drinking article, or preservation. The device which is going to mitigate flavor degradation of these eating-and-drinking article as much as possible from the former should do. For example, although observed in that recent years come, vacuum-pack a raw food ingredient, the vacuum-packed food which carries out cooking at low temperature the whole bag does not have the fly off of an aroma flavor, and the characteristic of a food raw material can be relished as it is. A limitation is located in the fitness range of an ingredient, and many unsolved technical problems, such as a problem of bacterial survival, occur, and it cannot become the approach of still satisfying fully.

**[0003]** The tenebrescence inhibitor (JP,1-22872,B) of the anthocyanin system coloring matter which some proposals are made about discoloration prevention of the tenebrescence of an eating-and-drinking article or browning, for example, on the other hand, used antioxidation nature, such as chlorogenic acid and caffeic acid, and anthocyanin system coloring matter content ingesta (JP,1-132344,A), the tenebrescence prevention approach (JP,59-50265,B) of a paprika pigment, etc. are indicated. Moreover, the browning prevention approach (JP,57-115147,A) of the saccharide by caffeic acid, ferulic acid, chlorogenic acid, etc., the manufacturing method (JP,58-32855,B) of a candy without browning using the browning prevention effectiveness of a saccharide, etc. are proposed.

**[0004]** Moreover, it is indicated that it is useful for the antioxidant which makes an active principle the pro anthocyanidin little object extracted from plant bodies, such as \*\*\*\*\* of grape fruits or a seed, in recent years preventing degradation by oxidation of food, drugs, cosmetics, etc. (JP,3-7232,B, JP,3-200781,A).

**[0005]**

**[Problem(s) to be Solved by the Invention]** Although deterioration degradation of the processing process of an eating-and-drinking article or the flavor under preservation is a serious technical problem, the solution whose satisfaction is still possible is not found out. Deterioration degradation of the flavor of this eating-and-drinking article is a troublesome technical problem which occurs irrespective of the existence of the existence of coloring matter, such as an anthocyanin like the above by which the conventional proposal is made, and paprika, or a saccharide. The flavor of an eating-and-drinking article

consists of a set of a general very unstable compound, and it is easy to receive an operation of the heat under processing of an eating-and-drinking article or preservation, light, air, an enzyme, etc., and deteriorates by it, and causing deterioration of quality is known well. Much reactions, such as migration of oxidation, reduction, a dehydrogenation, hydrolysis, a polymerization, a ring closure, ring breakage, esterification, a decarboxylation, and a double bond, are participating in the reaction whose eating-and-drinking article causes deterioration.

[0006] Although the effectiveness that come, and chlorogenic acid, caffeic acid, ferulic acid, etc. control deterioration of these flavors by heating if independent is comparatively large whenever the conventional proposal of the above is made, it is not necessarily enough for degradation prevention of the flavor by optical exposure.



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TECHNICAL FIELD

---

[Industrial Application] This invention relates to the anti-oxidant in which the remarkable multiplication-antioxidation nature containing the antioxidation nature component which consists of at least one sort chosen from (a) chlorogenic acid, caffeic acid, and ferulic acid in more detail, and the antioxidation nature component which consists of a (b) pro anthocyanidin little object is shown, and the eating-and-drinking article excellent in the flavor degradation tightness containing it about the eating-and-drinking article which has the improved flavor degradation tightness which added the flavor degradation inhibitor of an eating-and-drinking article, and it.

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PRIOR ART

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[Description of the Prior Art] It is to some extent hard to avoid degradation of the flavor under the production process of an eating-and-drinking article, or preservation. The device which is going to mitigate flavor degradation of these eating-and-drinking article as much as possible from the former should do. For example, although observed in that recent years come, vacuum-pack a raw food ingredient, the vacuum-packed food which carries out cooking at low temperature the whole bag does not have the fly off of an aroma flavor, and the characteristic of a food raw material can be relished as it is. A limitation is located in the fitness range of an ingredient, and many unsolved technical problems, such as a problem of bacterial survival, occur, and it cannot become the approach of still satisfying fully.

[0003] The tenebrescence inhibitor (JP,1-22872,B) of the anthocyanin system coloring matter which some proposals are made about discoloration prevention of the tenebrescence of an eating-and-drinking article or browning, for example, on the other hand, used antioxidation nature, such as chlorogenic acid and caffeic acid, and anthocyanin system coloring matter content ingesta (JP,1-132344,A), the tenebrescence prevention approach (JP,59-50265,B) of a paprika pigment, etc. are indicated. Moreover, the browning prevention approach (JP,57-115147,A) of the saccharide by caffeic acid, ferulic acid, chlorogenic acid, etc., the manufacturing method (JP,58-32855,B) of a candy without browning using the browning prevention effectiveness of a saccharide, etc. are proposed.

[0004]

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EFFECT OF THE INVENTION

---

[Effect of the Invention] According to this invention, the flavor degradation inhibitor of an eating-and-drinking article with the remarkable synergistic effect according the antioxidation nature component which consists of at least one sort of antioxidation nature components and the pro anthocyanidin little object which were chosen from the group which consists of chlorogenic acid, caffeic acid, and ferulic acid to combination is offered. Moreover, inconvenient flavor degradation of reduction of the aroma flavor under processing of this eating-and-drinking article thru/or preservation thru/or change, generating of a different taste nasty smell, etc. can be effectively controlled by making ingesta contain this flavor degradation inhibitor.

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TECHNICAL PROBLEM

---

[Problem(s) to be Solved by the Invention] Although deterioration degradation of the processing process of an eating-and-drinking article or the flavor under preservation is a serious technical problem, the solution whose satisfaction is still possible is not found out. Deterioration degradation of the flavor of this eating-and-drinking article is a troublesome technical problem which occurs irrespective of the existence of coloring matter, such as an anthocyanin like the above by which the conventional proposal is made, and paprika, or a saccharide. The flavor of an eating-and-drinking article consists of a set of a general very unstable compound, and it is easy to receive an operation of the heat under processing of an eating-and-drinking article or preservation, light, air, an enzyme, etc., and deteriorates by it, and causing deterioration of quality is known well. Much reactions, such as migration of oxidation, reduction, a dehydrogenation, hydrolysis, a polymerization, a ring closure, ring breakage, esterification, a decarboxylation, and a double bond, are participating in the reaction whose eating-and-drinking article causes deterioration.

[0006] Although the effectiveness that come, and chlorogenic acid, caffeic acid, ferulic acid, etc. control deterioration of these flavors by heating if independent is comparatively large whenever the conventional proposal of the above is made, it is not necessarily enough for degradation prevention of the flavor by optical exposure. Moreover, although it is effective in the pro anthocyanidin little object used for the same object controlling degradation of the flavor by light, the further improvement approach is searched for that it is hard to say that it is not necessarily enough for flavor deterioration prevention by heating.

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MEANS

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[Means for Solving the Problem] The antioxidation component which consists of at least one sort chosen from chlorogenic acid, caffeic acid, and ferulic acid this time as a result of [ the ] coming research in piles wholeheartedly that this invention persons should solve the fault of the conventional proposal like the above, If the antioxidation component which consists of a pro anthocyanidin little object is used together and it adds in an eating-and-drinking article, according to the fast synergistic effect which cannot be attained if respectively independent It found out that inconvenient flavor degradation of reduction of the flavor by heating and light under processing of this eating-and-drinking article thru/or preservation thru/or change, generating of a different taste nasty smell, etc. could be controlled notably, and this invention was completed.

[0008] Therefore, this invention offers the eating-and-drinking article which has the improved flavor degradation tightness containing the flavor degradation inhibitor of the eating-and-drinking article which combined the antioxidation nature component which consists of at least one sort chosen from (a) chlorogenic acid, caffeic acid, and ferulic acid, and the antioxidation nature component which consists of a (b) pro anthocyanidin little object, and this flavor degradation inhibitor.

[0009] The chlorogenic acid, caffeic acid, and ferulic acid which are used in this invention are the thing of itself known, they are available as a commercial item and extract extraction can also be carried out from the natural product of coffee student beans etc. further, for example. These chlorogenic acid, caffeic acid, and ferulic acid can use the extract of the coffee student beans which it is not necessary to be necessarily a pure article for example, and are obtained by carrying out as following as it is.

[0010] the ground coffee student beans -- the ethanol or water ethanol of about 0.05 - about 20 time weight -- adding -- for example, about 60 degrees C - about 100 degrees C -- it is -- for example, about 1 hour -- or it heats for about 10 hours. After cooling, a hydrochloric acid is added so that hydrochloric-acid concentration may become about 3 - 10% to the extract which separates insoluble solid content, removes and is obtained, for example, heating churning is carried out at about 50 degrees C - about 100 degrees C for about 30 minute - about 5 hours. Subsequently, it neutralizes using a sodium hydroxide, a potassium hydroxide, etc., and this concentration liquid can be processed by porous polymerization resin further, for example, and can be made to be able to stick to this resin after concentration, subsequently elution processing of this resin can be carried out by ethanol, and the extract containing chlorogenic acid, caffeic acid, etc. can be obtained. Or after it collects and condenses a solvent as it is and a methylene chloride etc. subsequently washes, without carrying out hydrolysis processing of the above-mentioned extract, the coffee extract which can be used by this invention can be obtained by carrying out adsorption treatment by porous polymerization resin like the above. The coffee extract which contains chlorogenic acid, caffeic acid and ferulic acid, or these in this invention may be used as it is, or may be used with the gestalt of a constituent with the suitable diluent or the support of these active principles. As an example of such a diluent or support, a \*\*\*\* liquid diluent or support, such as \*\*\*\* solid-state diluents, such as gum arabic, a dextrin, a glucose, a cyclodextrin, and shoe cloth, or support; water, ethanol, propylene glycol, a glycerol, and a surfactant, can be mentioned. The coffee extract containing chlorogenic acid, caffeic acid and ferulic acid, or these can be used as the shape of a liquid, a

milk liquid, and a paste, powder, and granularity, in addition proper dosage forms using this diluent or support. Moreover, the pro anthocyanidin little object acquired from \*\*\*\*\* or a seed of BUTOU fruits etc. by carrying out a hot water extract as a pro anthocyanidin little object used in this invention by the approach currently indicated by said JP,3-7232,B or JP,3-200781,A, for example, its gallate, etc. can be mentioned. These pro anthocyanidin little objects can also come to hand easily as a commercial item again.

[0011] The antioxidation nature component which consists of at least one sort chosen from (a) chlorogenic acid in the eating-and-drinking article flavor degradation inhibitor of this invention, caffeic acid, and ferulic acid, (b) Although especially the mixed rate of a pro anthocyanidin little object is not restricted and can be changed over the large range, it is convenient to usually carry out the mixed activity of the (a) component and the (b) component by the weight ratio between about 1:1 preferably about 1:9 thru/or about 9:1 within the limits, for example.

[0012] The flavor degradation inhibitor of the eating-and-drinking article of this invention has the effectiveness which it also prevents that flavors, such as flavors, such as newly added essence, oily perfume, emulsification perfume, and powder perfume, and a flavor seasoning, etc. deteriorate and deteriorate not to mention preventing that the flavor of eating-and-drinking article original deteriorates and deteriorates.

[0013]

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CORRECTION OR AMENDMENT

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[Kind of official gazette] Printing of amendment by the convention of 2 of Article 17 of Patent Law  
 [Category partition] The 1st partition of the 1st category  
 [Publication date] February 9, Heisei 11 (1999)

[Publication No.] Publication number 6-38723  
 [Date of Publication] February 15, Heisei 6 (1994)  
 [Annual volume number] Open patent official report 6-388  
 [Application number] Japanese Patent Application No. 4-214724  
 [International Patent Classification (6th Edition)]

A23L 3/3544  
 1/00  
 1/221  
 C09K 15/06

## [FI]

A23L 3/3544  
 1/00 Z  
 1/221 H  
 C09K 15/06

[Procedure amendment]  
 [Filing Date] August 18, Heisei 9  
 [Procedure amendment 1]  
 [Document to be Amended] Description  
 [Item(s) to be Amended] 0023  
 [Method of Amendment] Modification  
 [Proposed Amendment]  
 [0023]  
 [A table 4]

表 4

	A (本発明品)	B	C
K P A	100重量%	200重量%	0 重量%
コーヒークロロゲン酸(純度30%)	100 "	0 "	200 "
グリセリン	200 "	200 "	200 "
95%アルコール	200 "	200 "	200 "
水	400 "	400 "	400 "
合 計	1000 "	1000 "	1000 "

[Procedure amendment 2]

[Document to be Amended] Description

[Item(s) to be Amended] 0024

[Method of Amendment] Modification

[Proposed Amendment]

[0024] 0.02%, 0.05%, and the sample added 0.1% were prepared for the anti oxidant A prepared by (2) to the coffee drink prepared above (1). 0.05% and the sample added 0.1% also prepared the anti oxidant C for the anti oxidant B 0.05% and 0.1% as a comparison article. These samples were saved for one week at 55 degrees C, and ten persons' panelist often trained considering the refrigerator preservation article as control performed organic-functions assessment. The result is shown in a table 5.

[Procedure amendment 3]

[Document to be Amended] Description

[Item(s) to be Amended] 0026

[Method of Amendment] Modification

[Proposed Amendment]

[0026] The anti oxidant A which combined the pro anthocyanidin and coffee chlorogenic acid of this invention had an EQC or the flavor degradation prevention effectiveness beyond it to the anti oxidant B which swerved and used \*\* independently, and the anti oxidant C in about 1/2 thru/or about 1 / five amount or less the passage clear from the result of a table 5.

[Procedure amendment 4]

[Document to be Amended] Description

[Item(s) to be Amended] 0028

[Method of Amendment] Modification

[Proposed Amendment]

[0028]

[A table 6]



表 6

原 材 料	配 合 量
グラニュー糖	14.2kg
脱脂粉乳	2.4"
全脂粉乳	1.6"
紅茶エキス (B x. 0.7°)	70.0"
乳化剤 (ショ糖脂肪酸エステル HLB 15)	0.1"
ブラックティーフレーバー (長谷川香料製)	0.1"
水を加えて合計	200リットル

The same anti oxidant A was added 0.05% of the weight with having used for the above-mentioned tea-with-milk drink in the example 3, and it cooled after sterilization for 20 minutes at 120 degrees C after bottling, and as a result of carrying out after [ preservation ] organic-functions assessment for five days at 50 degrees C like an example 3, the desirable flavor at the time of manufacture was maintained as it was.

[Procedure amendment 5]

[Document to be Amended] Description

[Item(s) to be Amended] 0029

[Method of Amendment] Modification

[Proposed Amendment]

[0029]

[Effect of the Invention] According to this invention, the flavor degradation inhibitor of an eating-and-drinking article with the remarkable synergistic effect by combination with the antioxidation nature component which consists of at least one sort of antioxidation nature components and the pro anthocyanidin little object which were chosen from the group which consists of chlorogenic acid, caffeic acid, and ferulic acid is offered. Moreover, inconvenient flavor degradation of reduction of the aroma flavor under processing of this eating-and-drinking article thru/or preservation thru/or change, generating of a different taste nasty smell, etc. can be effectively controlled by making ingesta contain this flavor degradation inhibitor.

[Translation done.]